

**ADDENDUM #3
TO
PLAN OF STUDY
STEELCOTE FACILITY
ST. LOUIS, MO**

APRIL 19, 1994



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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ADDENDUM #3 TO PLAN OF STUDY
STEELCOTE FACILITY
Z-301

1.0 INTRODUCTION

1.1 Purpose & Content

This addendum to the Plan of Study is being submitted by Niedt Realty Company and Niedt Enterprises, Inc. f/k/a Steelcote Manufacturing Company (together, "Steelcote") to the United States Environmental Protection Agency, Region VII ("USEPA"), pursuant to an Administrative Order on Consent, Docket No. VII-91-H-0025 ("AOC"). The purpose of this addendum is to further characterize Steelcote's facility (the "site") as required by Paragraph 26 of the AOC. The purpose of the additional work described in this addendum is to address the following:

1. Determine the vertical and horizontal extent of contaminants, including concentrations, detected during earlier phases of investigation;
2. Provide a basis for remediation and/or additional investigation at the site, if necessary; and
3. Utilize existing data to more accurately pinpoint the source of contamination.

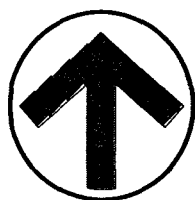
This addendum contains a brief description of the site, a description of the hazardous waste concerns, a detailed presentation of the proposed scope of work based on existing information, and a schedule for completing that work. Included by reference to this addendum, in addition to the Consent Order, are detailed technical procedures to be used in the field work, and the Quality Assurance/Quality Control and Hazard Assessment and Safety Plans. The aforementioned documents were submitted and approved with the original Plan of Study for this site and all work will be done in a manner consistent with the contents of these documents.

1.2 Facility Description

The site is located along the south side of Mill Creek Valley and bounded by Gratiot, Steelcote Square, Papin and the Missouri Pacific Railroad Right of Way. The site location is indicated in the map provided in Figure 1 and the layout of the site is shown in Figure 2. Figure

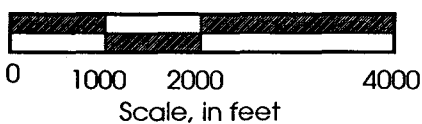
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3 is an aerial photograph which presents the site and the surrounding area. As is readily apparent, the site is surrounded by property used for rail truck transport, material storage, commercial and industrial purposes.



NORTH

SOURCE: USGS 7.5 min. Quadrangles Granite City and Cahokia, IL dated 1954



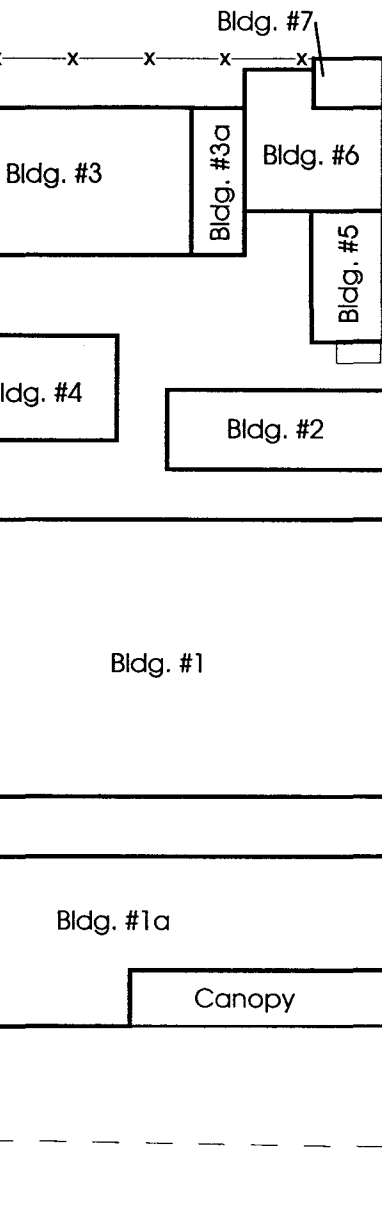
SITE LOCATION
STEELCOTE FACILITY
ST. LOUIS, MISSOURI

Gratiot Street

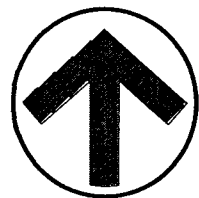
Facility Boundary

UPRR (Removed)

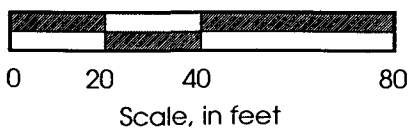
Steelcote Square



Papin Street



NORTH



SITE PLAN
STEELCOTE FACILITY
ST. LOUIS, MISSOURI

As is indicated on the layout, approximately eighty percent of the areal extent of the site is occupied either by buildings or concrete paving. A description of the buildings and their usage was presented in the original Plan of Study.

1.3 Site Drainage

Surface drainage in the area reflects surface contours and flows northeast across the site. Surface water is drained by the Metropolitan Sewer District System and hydraulic overloading results in the pooling of surface water along Mill Creek and includes back water, some of which results from hydraulic discharge from storm sewers at the Steelcote facility.

Large portions of the surface at the facility are either paved or occupied by buildings. Surface materials that are exposed consist of fill, underlain by glacial deposits, residual soil and Mississippi-age limestone. Depth to bedrock at the site is on the order of 60 feet.

As can be expected in such situations, water elevations fluctuate in response to local precipitation and runoff events. Ground water has been encountered within 15 feet of the surface at the facility. However, given the nature of the unconsolidated materials, it is likely that perched water systems are present above the static water table.

1.4 Hazardous Waste Concerns

Hazardous waste concerns at the site are the result of the former presence and previous use of various chemicals which are referred to in this document as contaminants of concern (COCs). The COCs which are listed in Table 1, were developed by reviewing records made available by Steelcote and comparing such information to hazardous waste lists as defined by 40 CFR Part 261. The list was further defined on the basis of the site characterization work conducted to date.

1.5 Description of Work

Work planned under this addendum includes four tasks. Ground water monitoring wells are to be constructed in two locations. Three wells will be constructed around the location of the former UST removed prior to the initial site investigation. A fourth well will be constructed in the area between Buildings #1 and #1a.

TABLE 1
STEELCOTE CONTAMINANTS OF CONCERN

Xylene
Di (2-ethylhexyl) Phthalate
Barium
Chromium
Lead

Ground water analyses will be performed for four quarters for the COCs listed in Table 1. The list of COC for the second and subsequent quarters will be subject to the provisions of paragraph 26c of the AOC. Field hydrologic testing will be conducted and compared to laboratory permeability test results. The existing wells at the site, installed during the initial phase of work, will be abandoned.

2.0 SCOPE OF WORK

2.1 Pre-Field Work

Pre-field work will consist of subcontractor selection, set-up of a decontamination unit, and mobilization of equipment to the site. Note that no on-site activities will be authorized prior to approval of this addendum by the U.S.E.P.A. and satisfaction of training and medical surveillance requirements for any and all individuals conducting this work.

Contractor selection will consist of selecting qualified laboratories and drilling contractors to perform work on the site and to analyze both soil and ground water samples. Note that subcontractors will each contract directly with Steelcote Manufacturing Company and the work will be overseen and coordinated through Shannon & Wilson, Inc.

Work zones and a combined personnel and equipment decontamination unit will be set up as in previous phases of investigation at the site. Some work activities may be located in public right-of-ways. For this reason, the areas around those work areas will have to be roped off and considered part of the exclusion zone during the construction and development of the wells. All wells will be recessed and secured with pad locks.

All equipment and personnel leaving the exclusion zones will have to be decontaminated as specified in the attached Hazard Assessment & Safety Plan (HASP) within the transition zone prior to leaving the site. The transition zone will have facilities for steam cleaning equipment and for donning and doffing personal protective equipment and hand and face washing for personnel.

In addition to decontamination for health and safety purposes, the transition unit will also be used for decontaminating sampling equipment prior to and after each use for a given soil boring or well as is described in later sections of this addendum.

After the decontamination units are set up and are operable, mobilization to the site will begin. Mobilization will include transportation and installation of all required sampling equipment and personnel at the site.

2.2 Field Work

The work will include installation of ground water monitoring wells, soil and ground water sampling, and conducting physical measurements. The existing information indicates that the

removed UST (also known as Building 4a) is the source of the contamination. Information supporting this includes the following:

1. The contaminants detected are consistent with the nature of contaminants detected below the buried UST;
2. The location of the UST relative to the detection of contaminants in the existing well network is consistent with what has been determined to date of the site geology and ground water; and
3. Investigation of historical records has not revealed any other credible source.

On the basis of the existing information, we propose construction of three ground water monitoring wells around the location of the removed UST. One additional well will be installed between Buildings 1 and 1a. Note that the narrow access width (less than nine feet) of the area between the two buildings may cause problems for a drill rig. In addition, a sewer line runs down the length of the alley. Until the drilling contractors inspect this location during the bid selection process, it is unknown whether a well can be placed in this location. The approximate locations of the four new wells are shown in Figure 3 along with the location of the four existing wells. If drilling in the alley is impractical, a well will be located as close as possible to the proposed location. One alternative would be the west end of the alley, which is near the soil boring that had evidence of contamination from the initial investigation. The new wells will be screened in the sandy silts overlying bedrock, as described in more detail below. The ground water will be monitored and analyzed for four quarters for the COCs. In addition, pump tests will be performed. The information which should be derived from the planned additional investigation would include the following:

1. Verification of the source, if any;
2. Additional contaminant analyses relative to levels of concentrations present and distribution;
3. Information with respect to remediation selection and design; and
4. Additional investigation, if necessary.

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During the drilling of the wells, which will be conducted with 6 1/4 inch inside-diameter hollow stem augers, a CME continuous sampler will be used to obtain a continuous soil core throughout the length of the boring. The soil core will be visually examined for both physical and chemical properties and will also be scanned with an organic vapor analyzer. Those sections of the soil core which either produce positive readings from the organic vapor analyzer or appear to have undergone chemical changes, will be selected for soils analysis. If no such indicators are present in any given core, then a composite sample of the entire core will be collected for analysis.

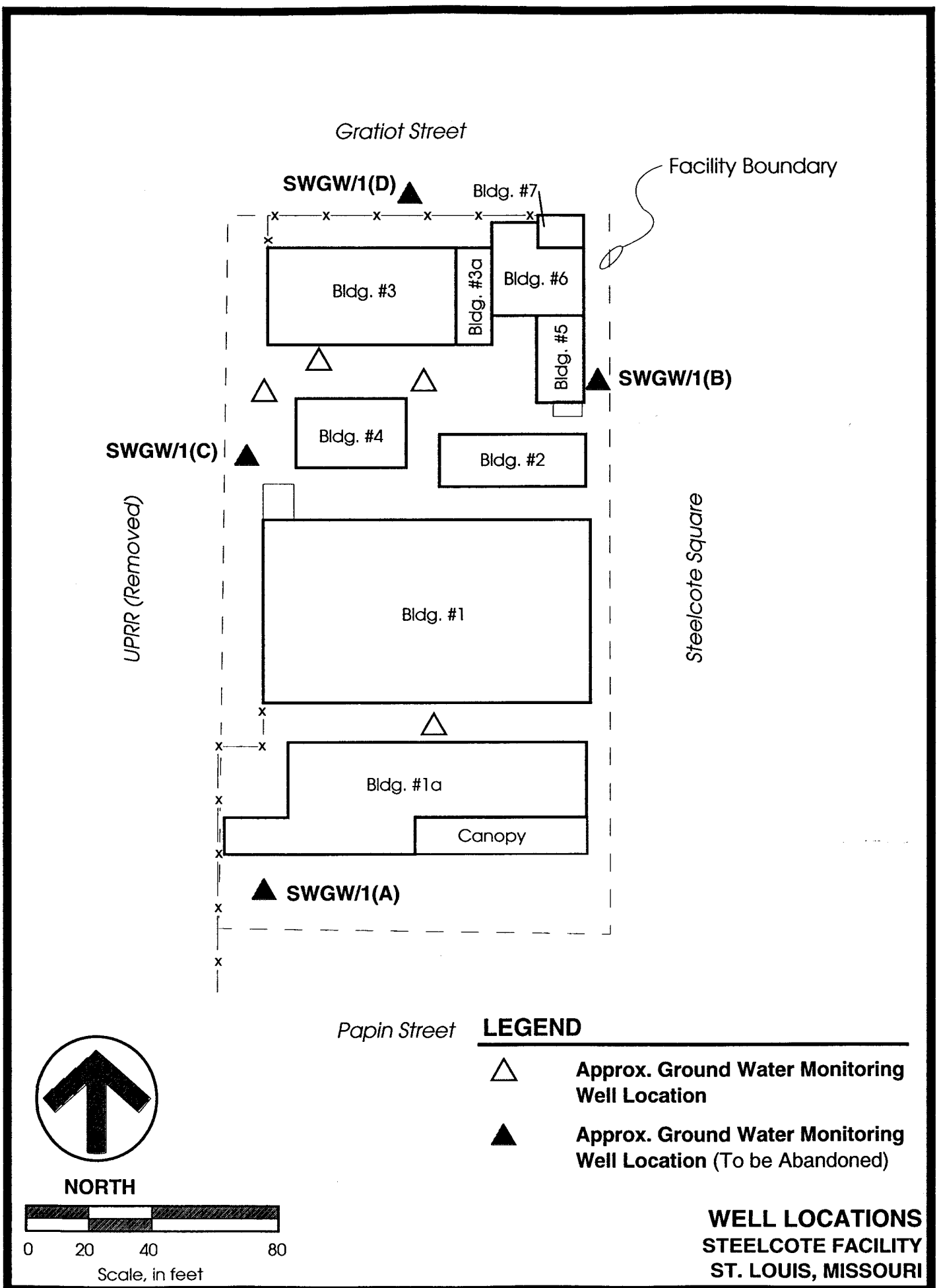
Sampling will be conducted in accordance with Technical Procedure 1 and the continuous sampling method will be the preferred procedure. However, if subsurface or other site conditions do not allow for implementation of the preferred method, other methods will be used.

In addition, during the advancement of the soil borings, physical changes will be noted and samples collected from that interval for physical testing in order to help determine aquifer characteristics and to correlate with existing subsurface information. At least one sample for physical testing will be collected from each soil boring that is converted into a ground water monitoring well.

All soil cuttings will be contained within 55-gallon steel drums until chemical analyses of the soils are completed. At that time, appropriate disposal will be arranged. The 90-day Resource Conservation and Recovery Act (RCRA) storage requirement interval will commence upon receipt of the results of the chemical analyses.

Well construction specifics are presented in both the Technical Procedures as well as the QA/QC Plan. The wells will be screened in the sandy silt above bedrock. It is anticipated that the well screen length will be five to ten feet, depending on thickness of the sandy silt at the boring location.

Physical measurements at the site will include surveying and hydrologic testing. Level surveying of the wells, including the top of the well and water levels of the upgradient and downgradient wells will be conducted to the nearest 100th of a foot vertically and the nearest one half foot horizontally. This survey will be tied in to the nearest benchmark. Water elevations will



be recorded for each hydrologic testing period and sampling period by measurement with an electric tape from the top of the well.

At least five days after the development of the wells has passed and following collection of the first set of ground water samples, the wells will be subjected to field permeability testing by one of the procedures indicated in Technical Procedure No. 5 as appropriate. It is proposed that the slug test method be used initially to determine permeability of the formation. A pump test will also be conducted to develop aquifer characteristics data.

Ground water sampling will be initiated and conducted on a quarterly basis for four quarters. The first quarter sampling of the new well network will occur at least five days after the completion of well development. Ground water sampling will be conducted in accordance with Technical Procedure No. 4, Collection of Ground Water and Leachate Samples. Development and purge waters will be discharged to the storm sewers as previously approved.

2.3 Field Work/Subsequent Phases

It may be necessary to conduct additional site investigation to adequately characterize the site. If it becomes apparent that this is necessary, EPA will be consulted and, if necessary, an addendum will be developed and submitted to the USEPA via the client for approval.

Quarterly ground water sampling and analyses will be reinitiated after development of the new wells and conducted as specified in the original work plan. In addition, water level measurements will be taken prior to purging the well for each of the four rounds of sampling events. Quarterly analyses will be statistically compared to results from the other wells as well as to results from previous quarters.

2.4 Abandonment of Existing Monitoring Wells

The existing ground water monitoring well network consists of four wells; one upgradient (SWG-A) and three downgradient (SWG-B, SWG-C, and SWG-D). On the basis of existing information, we propose to abandon all of the existing wells during this phase of work.

Abandonment procedures will follow the requirements of the State of Missouri (Sections 256.600 to 256.640 RSMo).

2.5 Physical Laboratory Analyses

The purpose of the physical laboratory analyses is to provide aquifer characteristic information in order to help determine the rate and direction of flow and the degree of flow preference within the vertical section of the aquifer. In addition, the physical laboratory analyses, which will include grain size analyses, permeability and Atterberg limits (one point), will be useful in the design of any remediation, if any is necessary.

2.6 Analytical Laboratory Analyses

Analytical laboratory analyses will, at least initially, include analyses of soil and ground water for the COCs listed on Table 1. This list may be modified on the basis of analyses of ground water monitoring and soil samples obtained from the installation of the ground water monitoring wells, as specified in paragraph 26c of the AOC.

2.7 Data Analyses and Reports

Two, and perhaps three, types of reports will result from data obtained during the field investigation. They are amendments to this Plan of Study, characterization reports and management reports.

Further amendments to the Plan of Study may be necessary depending on the results of the current investigation.

Characterization reports will include both a draft and a final report. The draft report will be submitted to the client for his review within three months after the fourth quarterly monitoring of ground water has been completed. The final report will be submitted within one month after comments from the client have been received. The reports will include characterizations of the waste materials if present, their source of origin, the host materials, including soil and ground water, and the likely fate of the contaminants within the host materials. The reports will also include recommendations relative to additional field work and/or remediation if necessary.

Management reports will include monthly status reports required by paragraph 28 of the AOC as well as any EPA notifications of field work that are required. The U.S. EPA will be given at least 15 days advance notice prior to any field activity and 20 days notice prior to disposal of any samples by Shannon & Wilson, Inc. Both notifications will be in writing.

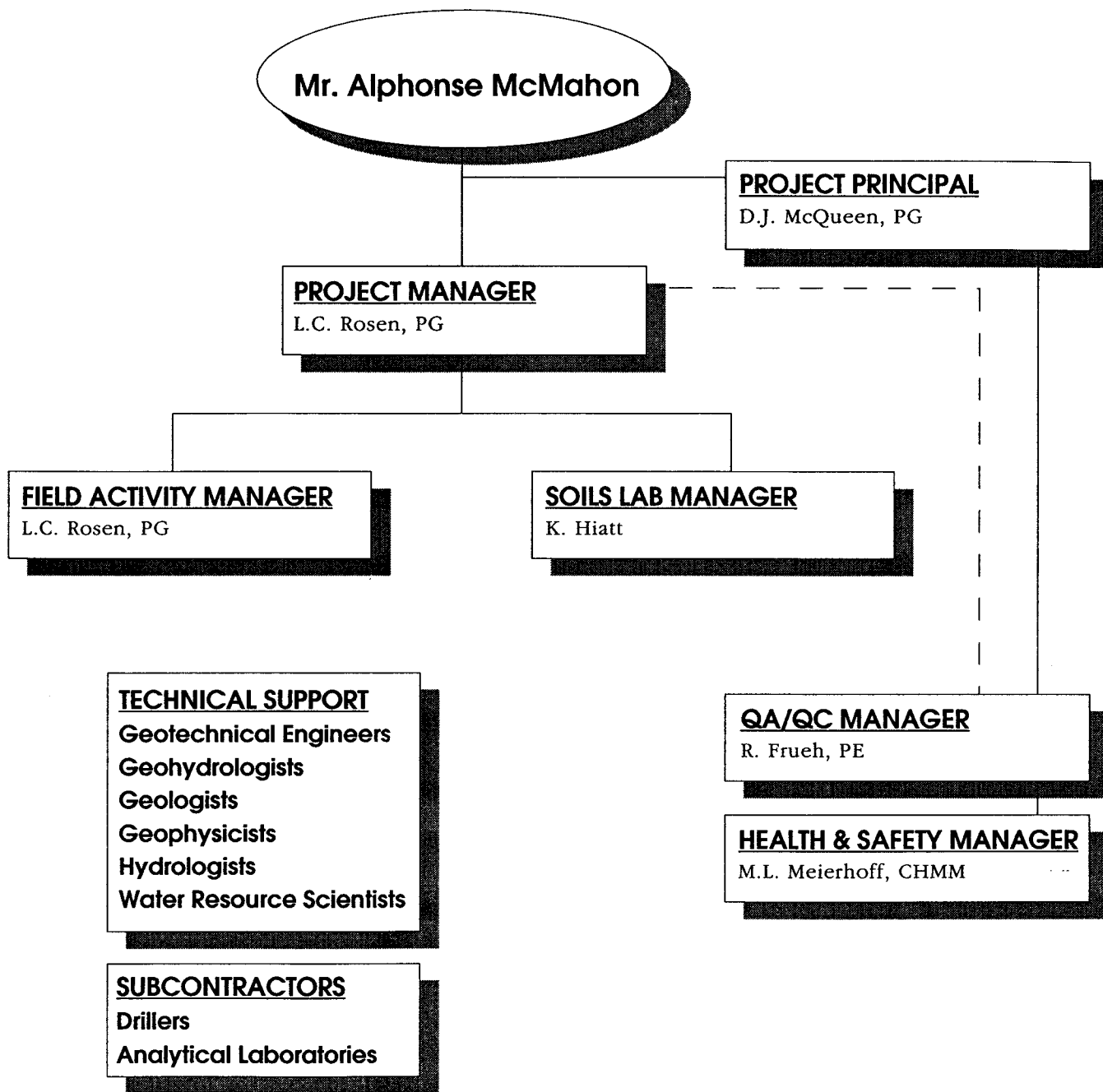
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Monthly status reports will also be developed which will consist of a description of all activities conducted in the previous month, including all technical data, such as laboratory analyses received during that month. The report will also fully describe any problems encountered during the previous month and recommendations for correcting the problems. In addition, the status report will include a description of those activities anticipated in the next month. These reports will be submitted to the client no later than the 10th calendar day of each month. This will allow the client to review and submit the appropriate portions of the status report to the USEPA by the 15th calendar day of each month.

3.0 MANAGEMENT

The principal in charge of this project (see Figure 4) for Shannon & Wilson, Inc. will be Mr. Donald McQueen, Vice President. Mr. McQueen will be responsible for any contractual interaction with the client and will participate in the technical direction of the project and technical analyses of the field investigation.

Mr. Larry Rosen will serve as a field manager and will be responsible for day to day operations during the field investigation. He will also participate in the technical evaluation of the information and will be responsible for the development of all reports, including the characterization and monthly status reports. Mr. Rosen will be supported by Shannon & Wilson technical staff as required and by the drilling and the analytical laboratory subcontractors.



MANAGEMENT
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4.0 SCHEDULE

The schedule for completing the work described in this addendum is indicated in Figure 5. As can be seen in the figure, the work described in this addendum is to be completed within 6 to 7 months and consists of three sets of activity: prefield work, field work, and data analyses and reports. This time frame reflects quarterly ground water monitoring through the first quarter.

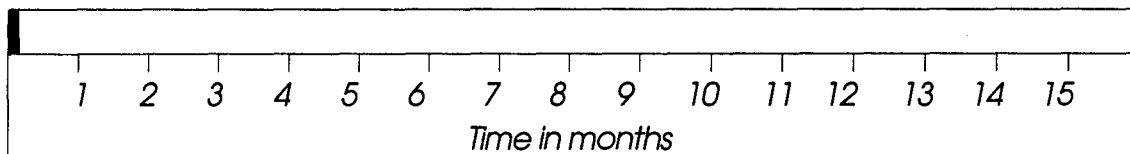
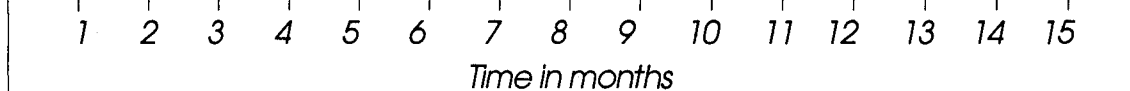
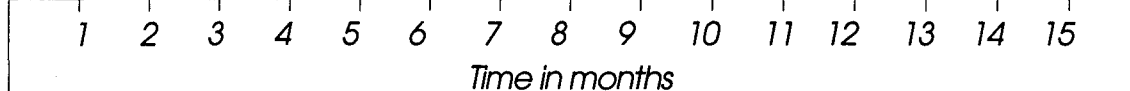
Prefield work will include contractor selection (driller and analytical laboratory), construction of the decontamination unit, and mobilization of all equipment to the site necessary to conduct the field work. Mobilization will be an ongoing activity to be performed as people and equipment are needed. The prefield work will be completed within the first month.

Initial field work will take place over a period of approximately two months. The largest portion of this field work will include the installation and development of monitoring wells, conducting hydrological testing of the wells, making physical measurements such as water level recordings, conducting laboratory analyses for chemical and physical properties of soils collected during construction of the wells, and reinitiating quarterly sampling and analyses of ground water samples from the wells. With the exception of subsequent quarterly sampling and analyses, this work should be completed by the end of the third month. Quarterly sampling and analyses, which will commence during the second month, will be conducted on a quarterly basis for four quarters.

Data analyses and reports and related activities would take place over the duration of the project.

The site characterization addendum report will be prepared in both draft and final form. The draft form will be completed within a three-month period after the fourth quarterly monitoring of ground water has been completed. This report will be submitted to the client for review and comment. A final report will be developed based upon these comments and will be submitted to the client. The final report will be submitted to the client within one month after receipt of the client's comments.

Status reports will continue to be developed and submitted to the client monthly. The client will receive these reports for each month by the 10th day of the following month in order to enable the client to include the appropriate portions of these status reports in their report to the USEPA.

EPA APPROVAL OF ADDENDUM**PREFIELD WORK****Contractor Selection****Decontamination****Mobilization****FIELD WORK****Monitoring Wells, Install and Develop****Hydro Testing/Physical Measurements****Physical Lab Analyses****Quarterly Sampling/Analyses****DATA ANALYSES & REPORTS****Prepare Draft Report****Prepare Final Report****Submit Final Report to EPA****Status report**

PROJECT SCHEDULE
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